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After the reading of the Minutes of the previous meeting, the President spoke as follows:—

“ Before the ordinary business of the meeting commences, I feel it to be my duty to express to you the grief which I have experienced, in common, I am sure, with yourselves, on the occasion of the sudden death of our esteemed and distinguished associate, Lord Strangford. The great services which his Lordship has rendered to the Society are well known to you; and the deep regret which I am sure you will feel at his loss must be aggravated when I tell you that at our very next meeting Lord Strangford would have communicated to you, *vivâ voce*, the result of all his researches into the geography of Central Asia—a task which he was so eminently qualified to execute with success, from his wonderful lore in all writings on the subject and his intimate acquaintance with Eastern languages.

“ In anticipation of the reading of this excellent paper, when he who was to have eloquently expounded it is in the grave, I call on you to unite with me in a vote of our heartfelt condolence towards the afflicted widow, who, as the daughter of that eminent geographer, Admiral Sir Francis Beaufort, in her father's lifetime gave full proof of her attachment to our science, and who frequently honoured us by frequenting our assemblies.”

(This expression of sorrow and condolence was cordially and unanimously approved, and the President was requested to convey the sentiments of the Society to Viscountess Strangford.)

The PRESIDENT then announced that the Council had selected as examiners for the medals offered for competition by the Society to the public schools, the Rev. William George Clark, Vice-Master of Trinity College, Cambridge, and Mr. Alfred Russell Wallace, the eminent naturalist and traveller. The head masters of the public schools had responded in cordial terms to the invitation of the Society; and he had every reason to expect that this system of awarding medals to the most proficient scholars would prove an important and enduring stimulus to the study of geography. The examination would take place on the first Monday in May. The President added that he could not make this announcement without stating that the scheme originated exclusively with Mr. Francis Galton, a member of the Council; and the Council had adopted it in the belief that it would be appreciated as one of the best means for the promotion of geographical knowledge throughout the country. The warmest thanks of the Society were due to Mr. Galton for the part he had taken in the matter.

The PRESIDENT then introduced Mr. Douglas Freshfield, Mr. Moore, and Mr. Tucker, three English gentlemen, who have recently made a remarkable exploration of the Caucasus, and who had ascended two of the loftiest mountains of the range—Mount Elbruz, which is 2800 feet higher than Mont Blanc, and Mount Kasbek, which is 16,546 feet above the sea-level. The President said he must call them the two highest mountains in Europe, because they were situated on the northern side of the Caucasian chain, which had been considered by modern geographers the boundary between Europe and Asia. Mr. Freshfield would read his remarkable account of the journey, and of the difficulties he and his companions encountered, and how they obviated them.

The following paper was then read by the author:—

*Journey in the Caucasus and Ascent of Kasbek and Elbruz.*

By DOUGLAS W. FRESHFIELD.

THE author stated that the journey to the Caucasus was made by himself with two friends, Mr. Tucker and Mr. Moore, accompanied by

Francis Devouassoud, of Chamounix. The main object of the visit was to explore the mountain-chain, and to ascend, if possible, some of its highest summits. The party started from Tiflis, on the 26th of June, 1868, having there received from the Russian authorities such assistance as could be rendered, and they noted their thanks especially to General Chodzko, the officer under whose direction the five-verst ordnance map was executed; they also acknowledge the assistance they had received from Herr Abisch and Herr Radde.

The new Dariel road was nearly completed; though well constructed, it is not equal in point of engineering to the best Swiss or Austrian highways through the Alps. On the south side of the chain the scenery is pretty without being grand, and recalled part of the German Tyrol. The valley of the Terek, on the north side of the pass, is of an entirely different character; treeless glens, bold rocks, slopes of steepness forbidding even to eyes accustomed to those of the Alps, and stone-built villages, scarcely distinguishable from the neighbouring crags; such are the main features of the 16 versts' drive from Kobi, the highest station in the valley of the Terek, to the village of Kasbek. The observant mountaineer will previously have caught several glimpses of the summit of Mount Kasbek, but it is only on reaching the station that the magnificent mass is fully seen, towering thousands of feet above its neighbours, in the form of a steep-sided dome of snow, broken by masses of crag, the uppermost of which—a horse-shoe in form—is conspicuous in most views of the mountain from the east. From the earliest times Kasbek has taken a place in history, and has, somewhat unfairly, robbed its true sovereign, Elbruz, of public attention. Situated beside, and almost overhanging the glen through which for centuries the great road from Europe to Asia has passed, it forces itself upon the notice of every passer by, and the traveller, who if blessed by a clear day, sees Elbruz only as a huge white cloud on the southern horizon, as he jolts over the weary steppe, is forced to pass almost within reach of the avalanches that fall from his more obtrusive rival. It is therefore not difficult to see why Kasbek has become famous; why in early times the mass of crag on the face of the mountain, so conspicuous from the post station, was made the scene of Prometheus' torment, why in later times superstition has declared that amongst these rocks, a rope, visible only to the elect, gives access to a holy grot, in which are preserved the tent of Abraham, the cradle of Christ, and other sacred relics.

The ascent of Kasbek was commenced on the 30th of June, the party

bivouacking at the height of 11,100 feet. The weather, after sundry fluctuations, settled fine. At 2·45 A.M., on the 1st July, the ascent was resumed, the travellers fully enjoying the moonlight view of the grand circle of ice-mailed peaks around them, and the glorious sunrise flush which succeeded it. Climbing the left side of the glacier, which was but little crevassed, they rounded the base of the east flank of Mount Kasbek. Arrived at some rocks, where a tributary glacier joins the main stream, they halted to put on the rope, before turning up the face of the mountain. Ascending at first by rocks, afterwards by broken slopes of nevé, they gained height rapidly. At 6·30 A.M. they were at 14,800 feet above the sea, and only 1800 below the top.

Some fine peaks, which they afterwards knew as the Adai Kock group, were conspicuous to the west, the view being magnificent and perfectly clear. To the south the eye already ranged over the main chain of the Caucasus, across the valley of the Kur to the hills beyond, while behind the rugged ridges which rise on the east of the Terek valley, the peaks of Daghestan raised their snowy heads. From this point to the summit, numerous crevasses had to be crossed or rounded, and in passing one of them Mr. Tucker slipped, but the others remaining firm, and the rope holding, he regained his foot-hold. For four hours before reaching the summit, the ascent was by a slippery ladder of ice, to which they had to cling with knees and ice-axes, as well as hands and feet, exposed to a furious wind, which drove showers of snow and ice in their faces. At 11 A.M., they gained the saddle between the two summits; the final climb up the eastern and highest peak was not difficult. They cut up a bank of hard snow, scaled some rocks, then found themselves on the snow cupola which crowns the mountain; up this they mounted, until the ridge ceased to ascend, and the highest summit of Kasbek (16,546 ft.) was reached. The valley of the Terek, was partially hidden by the clouds, which not only covered the great northern plain, but also filled the valleys of the mountain-range. They were surprised by the apparent grandeur of the eastern chain, where group after group of snowy peaks stretched away to the far-off Basarjusi (14,772 feet), the monarch of the Eastern Caucasus. Nearer and more conspicuous was the fine peak of Schebulos (14,781 feet). In the distance they sought for Elbruz, but found it not; whether veiled by clouds or hidden behind the projecting masses of the Gotschtantau group, they could not say. They fancied afterwards that they recognised Kasbek from Elbruz; the converse, of course, is possible, but the distance between the two mountains is 120 miles as the crow flies. The descent by a different slope

was long and intricate, but not difficult, and the banks of the torrent flowing from the Devdora glacier were reached 7·45 P.M. Here they slept under a rock with some goatherds, and found their way by the defile of Dariel to Kasbek village the next morning. In the evening the porters, who had supposed them lost, returned, and their account of the achievement created great excitement in the place; the villagers expressing their congratulations by hugging and kissing the successful mountaineers. The travellers effected the journey from Kasbek to Elbruz (120 miles in a straight line) by the upper valleys of the streams which flow from the glaciers of the central ridge. Many of these valleys are troughs lying parallel to the direction of the main chain. The plan of route, after leaving the post-road at Kobi, was to ascend the Terek to its source, cross to the Ardon, descend the east, and mount the west branch of that river; traverse the main chain of the Mamisson Pass, and then work along the upper valleys of the Rion and Ingur, making their way across the sources of the Tzkenis-Tsquali, between them. From Pari, the Russian post in Suanetia, they proposed to cross the chain to the Baksan valley on its northern side, at the foot of Elbruz. This journey took four weeks to accomplish. As far as the Mamisson Pass, the characteristic of the scenery is savage grandeur. The natives are Ossetes, a tribe famed for their personal appearance, and the picturesque richness of their costume; their language is the most nearly allied to Sanscrit spoken on this side of the Indus. They have been converted to a nominal Christianity.

From the Mamisson to the Nachar Pass west of Elbruz, the watershed runs north-west and south-east, in a straight line for a distance of 100 miles, without any break of less than 10,000 feet; covered throughout with glaciers, and studded with peaks which average from 14,000 to 16,000 feet in height. The slopes of the Rion basin are clothed with magnificent pines, which are not here, as in the Alps, the highest trees; above them is found a zone of birch, terminating at 7500 feet, the upper limit of forests in the Caucasus. A dense undergrowth of rhododendrons and azaleas adds to the beauty of the sylvan scenery. The inhabitants are a poorer race than the Ossetes, but more kindly disposed towards strangers. From the Rion valley the party made an expedition over the glaciers to the north side of the chain and back, leaving their interpreter and luggage at Gebi. The pass made by them for the first time, on their return, led up the icefall and over the snow-fields of the great Karagam glacier, and equalled in difficulty and scenery any of the great glacier-passes made during the last few years in Switzerland.

They were three days traversing the network of glens containing the sources of the Tzkenis-Tsqali, which are uninhabited. The distinguishing feature of the country is the extraordinary rankness of the herbage, brought more home to travellers by the absence of path, which compelled them to force their way through the forest. Once descended from the ridge separating the Rion and eastern Tzkenis-Tsqali, they were either entangled in dense thickets or waded in the glades through vegetation always up to their shoulders, and often above their heads, consisting of hemlocks and other weeds, interspersed with gigantic tiger-lilies.

Suanetia, or the Upper Valley of the Ingur, is, both as regards its scenery and inhabitants, probably the most interesting district of the Caucasus. A large basin, 40 miles long by 15 broad, is encircled by glacier-crowned ridges, and divided into numerous wooded gorges and meadow-basins by lower spurs. It is accessible from the outer world only by a narrow, and at times impassable ravine, or by lofty mountain-passes. The upper glens harbour the most savage and untameable of the Caucasian races, and are, in fact, a sink of iniquity, where robbers and murderers—who have made their own homes too hot to hold them—find refuge. The hamlets are grouped in clusters, each of which is a fortress, the houses being built of stone, with slits for windows, and surmounted by towers. At Jibiani, the highest Suanetian village, fear of the unknown power of English revolvers alone deterred the natives from carrying out their threat of plundering the travellers.

West of Pari the Nakra valley runs north into the heart of the chain, and a pass about 10,800 feet in height leads from its head to the Baksan valley on the north side of the watershed. At Uruspieh, the highest village in the valley, the Mahomedan princes were very hospitable; they are of a Tartar race, which inhabits the upper basins of the Baksan Tschegem and Tcherek.

On the 29th of July the party left Uruspieh to ascend Elbruz, and slept in a glen closed by one of the glaciers descending from the mountain. On the 30th they climbed the slopes on the true right of the glacier, and pitched their tent on some rocks at a height of 11,900 feet; 500 feet below the great nevé plateau, which spreads round the base of the mountain, the summit of which resembles in shape an inverted tea-cup. The night was intensely cold. A little after 2 o'clock on the morning of the 31st, they resumed the ascent. Severe biting cold and a high wind rendered the climb extremely toilsome; but they met with no difficulties formidable to a practised mountaineer, and reached the top (18,526 ft.) at 10.40 A.M., accompanied by two natives of Uruspieh. They visited the three highest

points of the horse-shoe ridge (enclosing what appeared to be an old crater), which forms the summit, and built a stone man on one of them. To the south and east the view was cloudless, and they could see the mountains of the Turkish frontier between Batoum and Achalzich. The Pennines from Mont Blanc cannot compare to the central chain of the Caucasus, as seen from Elbruz. The Caucasian groups are finer and the peaks sharper.

From Uruspieh the party descended in two days to Pätigorsk, the Russian bathing-place, on the north side of the Caucasus, where mineral springs abound.

Re-entering the mountains at Naltchik, they penetrated to the glaciers at the source of the Tscherek (to be distinguished from the better known Terek). These flow from the east flanks of Gotchtantau, 17,000 feet, and Dychtau, 16,900 feet—the Caucasian summits next in height to Elbruz. They crossed a high pass into the Uruch Valley, which they descended to Ardon, where they rejoined the post-road two stages from Wladikafkas. The gorges through which the Tscherek and the Uruch have forced a way out to the northern steppe are of the most magnificent description. They are deep trenches, cut down from the tops of the mountains to a depth of 5000 feet, and the fine timber which clothes every ledge between the precipices adds much to the grand effect of these defiles, which are unequalled in the Alps.

From Wladikafkas they returned by the Dariel road to Tiflis, and thence journeyed to Kutais by Borjom and Achalzich.

In conclusion, the author made some remarks on the paragraphs which had appeared in the 'Allgemeine Zeitung' and 'Pall Mall Gazette,' asserting Kazbek and Elbruz to have been previously ascended by German savans. He referred to the works cited as authorities for these statements (Herr Wagner's 'Kaukasus in 1843-4,' and Kuppfer's 'Voyage dans les Environs d'Elbruz'), and proved from them that the authors made no claim to have reached the summit of either mountain.

Mr. Freshfield also drew attention to the controversy lately raised as to the limits of Europe and Asia; and stated his opinion that the boundary line afforded by the watershed of the Caucasus, and adopted by Keith Johnson, M'Culloch, Blackie, Hall, and other modern geographers, is the best possible. Kasbek and Elbruz both lying north of this watershed are therefore European mountains.

The paper will be printed entire in the 'Journal,' vol. xxxix.

The PRESIDENT, in expressing the thanks of the Society to Mr. Freshfield, observed that the exploit which he had recounted did great credit to the English nation; none but trained Alpine travellers could have accomplished it. Englishmen had been ridiculed for their enthusiasm in exploring the highest

peaks of the Alps, which, it was said, was risking life for no useful purpose. But he maintained that these three gentlemen would never have been able to overcome the difficulties of the Caucasus if they had not previously been trained to climbing mountain-peaks among the Alps. When he first read the paper, which he did with great admiration, tracing step by step the enormous difficulties that these gentlemen had undergone, he was surprised at some very remarkable features which were brought forward; namely, the great superiority of the Caucasian chain over the mountain ranges of Europe in scenery, in the foliage, and in much that engages the attention of the botanist and the geologist. One remarkable fact was this, that, in this very remarkable region, deciduous-leaved forest-trees were found up to the snow-line. At altitudes where in the Alps were found only conifers, in the Caucasus ash and birch are growing in abundance. Reverting to the geographical position of Elbruz and Kasbek, he had the satisfaction of exhibiting to the meeting the geological map of Russia and the surrounding States (he here held up the map) as prepared by his colleagues, M. de Verneuil and Count Keyserling and himself in the year 1845, for on this map the two mountains of Kasbek and Elbruz are laid down as formed of igneous rocks on the northern side of the Caucasian chain, precisely in accordance with the observations of the three brave young Englishmen. Of their exploits he was most proud; and he must add that the Alpine Club had done good service in training up men who could accomplish such a very remarkable exploration.

Sir HENRY RAWLINSON, on being called upon by the President, said he had seen these mountains only from a distance when in Russian Georgia, but had conversed a good deal about them with Russian officers, and the impression he derived was in accordance with what Mr. Freshfield had said. The mountains, he believed, had never really been ascended by the two German savans. He thought the analysis of the ascents which had been given by Mr. Freshfield was quite sufficient to convince us that these English gentlemen were really the first people who had ascended the mountains. He quite agreed with Sir Roderick Murchison as to the advantage of training our young men in mountain research and discovery. The Alpine Club really deserved well, not only of geographers, but also of the country. We heard much of the risk to life, of the danger and drawbacks which attended the pursuit; but really these were the very things which formed and tempered the English character. Unless we had these schools of danger, we should not be the nation we are. When he came back from Georgia, seven or eight years ago, he took the opportunity of mentioning to the Society that the southern slopes of the Caucasus formed the most beautiful tract of country he had ever seen. In the autumn there was no country in the world that could be compared for sylvan beauty with this region. He also mentioned, at the time, that the beauty of the inhabitants was fully equal to the beauty of the scenery; and, on that account, he would also recommend the country to the admiration of his travelling countrymen. Again, in the matter of ethnology and archæology, this country was exceedingly interesting. These very Ossetes, "the gentlemen of the Caucasus," were one of the most interesting races in the world; the Ossete language was nearest to the Sanscrit of any language spoken west of the Indus. Throughout the Caucasus there were traces of all the languages we know anything of; there were fifty or sixty different languages all collected in a small area, remnants—"linguistic boulders" we might call them—of languages that had died out. He believed, when the subject was more fully investigated, that the Caucasus would be found to be a perfect mine of philological treasures. Again, the very names that had been quoted were of the greatest interest. Thus *Tzkenis Tsquali* meant really "a horse river;" it represented the exact name of *Hippopotamus*, which the Greeks gave to the river. Then *Elbruz* was a pure old Hun word, meaning a very lofty



mountain; and its existing in an isolated spot like that was of antiquarian interest.

The PRESIDENT said he had only one other observation to make with respect to the paper. When he read it, he wrote to Mr. Freshfield to say how much he regretted that he had not brought home a small piece of the summit of this remarkable mountain, Elbruz—it would have been worth many times its weight in gold. It turned out, however, that Mr. Freshfield had brought home a little bit, which he now held in his hand. It would be deposited in the Museum in Jermyn Street, with a suitable inscription. In reply to an inquiry, the President said it was an igneous rock of ancient volcanic character, which he believed had not formed part of a subaërial eruption.

Mr. SAUNDERS said, the question was, whether that piece of rock came from Asia or Europe? His inclination was to the side of the ancient geographers, who classed the Caucasus with the mountains of Asia. The direction and the whole character of the range went to show that it belonged to Asia rather than to Europe. The inhabitants were more Asiatic than European; and the Russians, in their administrative arrangements, wholly ignored any division which would separate the Russian provinces on one side of the mountains from those on the other.

The PRESIDENT said they could not then go into the general discussion of that which, according to territorial divisions between States, might be considered to constitute the boundary between Europe and Asia. In the Ural Mountains, which, in the eastern dominions of Russia separate Europe from Siberia and Asia, the real dividing line is the watershed; and he (the President) as well as the present Emperor Alexander II. (when Cesarewitch) have, when sitting across the culminating central peak of that chain, had one leg in Europe and the other in Asia.\* On this same principle of physical geography, the President considered Elbruz and Kasbek to be in Europe, because they both stood out on the northern side of the Caucasian watershed.

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*Fifth Meeting, January 25th, 1869.*

SIR RODERICK I. MURCHISON, BART., K.C.B., PRESIDENT, in  
the Chair.

PRESENTATIONS.—*Felix Bedingfeld, Esq.; Captain B. V. Layard.*

ELECTIONS.—*Henry Blaine, Esq.; Walter L. Buller, Esq.; H. E. Buxton, Esq., B.A.; Colonel Elsay, R.E.; Lieut. G. F. Harris; John Howard, Esq., C.E.; John K. Laughton, Esq.; Captain W. R. Llewellyn, R.A.; R. J. Moser, Esq.; Peter Rylands, Esq., M.P.; Thomas Sutherland, Esq.; John B. Sedgwick, Esq.; Captain C. E. Stewart, I.A.; Col. E. Smyth; Warrington Smyth, Esq., F.R.S.; Captain Frederic Trench; Lieut. Henry Trotter, R.E.*

ACCESSIONS TO THE LIBRARY FROM JANUARY 11TH TO JANUARY 25TH, 1869:—‘Handbook of the Economic Products of the Punjab.’ By Baden H. Powell. Roorkee, 1868. Presented by the author.

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\* See ‘Russia and the Ural Mountains,’ Frontispiece and p. 434.

‘Expedicion al Interior de la Republica del Peru.’ Por Juan G. Nystrom. Donor, the author. ‘Reise durch Nord Afrika, von Tripoli nach Kuka.’ By Gerhard Rohlfs. Donor, Dr. A. Petermann. Memoir of the Hydrographical Department of the Admiralty, 1868. Donor, Captain G. H. Richards, R.N., Hydrographer. ‘La Terre.’ Par Elisée Reclus. 2 vols. 1869. Purchased. ‘Ueber Compas und Compas-Karten.’ Von Dr. Sophus Ruge. Dresden, 1869. Donor, the author. ‘On Greenland Algæ.’ By Professor Dickie. 1869. Donor, R. Brown, Esq. ‘Pinnipedia frequenting the Spitzbergen and Greenland Seas.’ By R. Brown. 1869. Donor, the author.

ACCESSION TO THE MAP-ROOM SINCE THE LAST MEETING OF JANUARY 11TH, 1869.—Map of Vancouver Island and British Columbia. By R. Brown, Esq., F.R.G.S. Presented by A. Petermann.

The following papers were read:—

- 1.—*On the Effects of Forest Destruction in Coorg.* By  
GEORGE BIDLE, Esq., M.D.

[EXTRACTS.]

COORG lies near the centre of the Western Ghâts, and chiefly on the eastern aspect of the range. On its western margin the crests of the chain rise up in bold peaked mountain masses, some of which attain the height of 5000 feet above the sea, and to the east of these the country consists of a series of low, long-backed hills, with intersecting deep-set valleys, running out towards, and gradually subsiding in, the table-land of Mysore. The province is chiefly drained by the Cauvery and its tributaries, but several large streams descending to the western coast of the Peninsula also have their origin in it. The Cauvery rises far to the west, and for the first 10 miles or so of its course passes down the centre of a broad, flat-bottomed valley, surrounded on three of its sides by steep lofty hills. Contrary to what might have been expected, this large basin contains but little forest, so that the heavy rainfall that descends on it must at once be precipitated into the river. The average elevation of Coorg is about 3000 feet above the sea, and at no distant date nearly the whole province appears to have been covered with forest. Towards the west, the remaining forest is, as a rule, dense and lofty; but at the distance of 10 miles from the crest of the ghâts it begins to get less so, and at 12 miles we enter the bamboo district, in which the trees are smaller and the jungle more open. The nature of the forest, and also the kinds of trees found in it form pretty accurate indexes of the amount of rainfall. Thus in the